

In re: Gerald H. Negley et al.
Application Serial No.: 10/659,108
Filed: September 9, 2003
Page 2 of 7

REMARKS

Applicants appreciate the continued thorough examination of the present application that is reflected in the non-final Official Action of July 8, 2005. However, Applicants respectfully submit that the primary reference, U.S. Patent 6,480,389 to Shie et al., was already cited and clearly distinguished during prior prosecution. Moreover, the newly cited U.S. Publication 2004/0041757 to Yang et al. does not supply the missing teachings. Finally, it would not be obvious to combine Shie et al. with Yang et al. in view of the clear teaching away of Shie et al. This analysis will be provided in more detail below.

Independent Claims 3 and 15 Are Patentable Over Shie et al. In View of Yang et al.

Independent Claims 3 and 15 stand rejected under 35 USC §103(a) as being unpatentable over Shie et al. in view of Yang et al. Shie et al. was already cited in the Official Action mailed March 2, 2005, and in the Official Action mailed April 6, 2005. The present Official Action concedes, at the top of Page 3:

...Shie does not disclose a conformal insulating coating in the cavity.

However, Applicants respectfully submit that Shie et al. actually teaches away from the recitations of independent Claims 3 and 15. In particular, Claim 3 recites:

3. A mounting substrate for a semiconductor light emitting device comprising:
a solid aluminum block including a cavity in a face thereof that is configured for mounting a semiconductor light emitting device therein; and
a conformal insulating coating comprising aluminum oxide on a surface of the solid aluminum block, and in the cavity; and
first and second spaced apart conductive traces on the conformal insulating coating in the cavity that are configured for connection to a semiconductor light emitting device. (Emphasis added.)

Moreover, remaining independent Claim 15 recites:

15. A light emitting device comprising:
a solid aluminum block including a cavity in a face thereof and a conformal aluminum oxide coating on a surface thereof including in the cavity;
first and second spaced apart conductive traces on the conformal aluminum oxide coating in the cavity;

In re: Gerald H. Negley et al.
Application Serial No.: 10/659,108
Filed: September 9, 2003
Page 3 of 7

a semiconductor light emitting device that is mounted in the cavity and is connected to the first and second spaced apart conductive traces;

a lens that extends across the cavity; and

an encapsulant between the semiconductor light emitting device and the lens. (Emphasis added.)

Accordingly, both independent Claims 3 and 15 clearly recite that the conformal aluminum oxide coating is in the cavity and that the first and second spaced apart conductive traces are on the conformal aluminum oxide coating in the cavity.

These structural recitations are not described in Shie et al. and, in fact, Shie et al. teaches away from these structural recitations. In particular, Shie et al. Column 3, lines 4-25 states:

Further, a layer of aluminum oxide (alumina) 14 functioned as an insulating layer is firstly formed on the upper surface and the outer surface of the wall 16, except on the inner surfaces of the cup-shaped portion 11, and then a layer of electrode material 15, preferably a light reflective metal such as silver, gold or aluminum, is deposited to cover the layer of alumina 14 and, in addition, to cover the inner surfaces of the cup-shaped portion 11.

In specific, the layer of electrode material 15 is formed on the layer of alumina 14 and on all of the inner surfaces of the cup-shaped portion 11. In this state, by means of an adequate processing, a portion of electrode material 15 covered on upper inner peripheral portion of the cup-shaped portion 11 and a portion of alumina 14 covered on the same are removed so as to separate the electrode material 15 into two parts, wherein the one part, referred to as an electrode 15b, on all of the inner surfaces of the cup-shaped portion 11 is substantially connected to the metallic substrate 10, and the other part, referred to as an electrode 15a, on the alumina 14 functioned as the insulating layer between the electrode 15a and the metallic substrate 10 can be used as an independent external electrode of the metallic substrate 10. (Emphasis added.)

This passage makes it clear that, in Shie et al., the aluminum oxide coating is not formed in the cavity, whereas Claims 3 and 15 clearly recite that the aluminum oxide coating is formed in the cavity. This passage also makes it clear that the first electrode 15b is formed in the cavity directly on the metallic substrate, whereas Claims 3 and 15 clearly recite that the first conductive trace is formed in the cavity on the conformal insulating coating. Finally, this passage also makes it clear that the second electrode 15a is formed on the aluminum oxide coating 14 outside the cavity,

In re: Gerald H. Negley et al.
Application Serial No.: 10/659,108
Filed: September 9, 2003
Page 4 of 7

whereas Claims 3 and 15 clearly recite that the second conductive trace is also formed on the conformal insulating coating in the cavity. Accordingly, this passage of Shie et al., along with Figures 1-3 of Shie et al., teach away from many of the recitations of independent Claims 3 and 15.

In an attempt to supply the missing teaching, the Official Action now cites Yang et al. Assume, for the sake of argument that Yang et al. discloses a mounting substrate 43 that can be aluminum, and an insulating aluminum oxide layer 42, as stated at Page 3 of the Official Action. However, in Yang et al., the LED 71 stands away from the metal plate 43. Metal plate 43 is flat, and there is no cavity in the metal plate 43 in which a semiconductor light emitting device is mounted. Rather, as noted in Paragraph [0023] of Yang et al., the insulating layer 42 provides an insulating layer in the through holes of the metal plate:

Inside the substrate 40 a metal plate 43 comprising a plurality of holes, whereas there forms the protective insulating layer 42 on the holes of the metal plate 43 and on the upper and lower surface of the metal plate 43.

Accordingly, the combination of Shie et al. with Yang et al. would not disclose the above-underlined recitations of Claims 3 and 15, because Yang et al. does not disclose a cavity, a conformal insulating coating in the cavity or conductive traces on the coating in the cavity. Moreover, it would not be obvious to combine Yang et al. with Shie et al. to provide a conformal insulating coating in the cavity and conductive traces on the coating in the cavity in direct contradiction to the explicit teachings of Shie et al. Finally, even if these references were somehow combined, the combination might provide an insulating layer in the through holes of a metal plate, but would not describe or suggest a conformal insulating coating in the cavity and conductive traces on the coating in the cavity.

To establish a *prima facie* case of obviousness, the prior art reference or references when combined must teach or suggest all the recitations of the claims, and there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. See M.P.E.P. § 2143. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art *also suggests the desirability of the combination*. See

In re: Gerald H. Negley et al.
Application Serial No.: 10/659,108
Filed: September 9, 2003
Page 5 of 7

M.P.E.P. § 2143.01(citing *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990)). As emphasized by the Court of Appeals for the Federal Circuit, to support combining references, evidence of a suggestion, teaching, or motivation to combine must be *clear and particular*, and this requirement for clear and particular evidence is not met by broad and conclusory statements about the teachings of references. *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). In another decision, the Court of Appeals for the Federal Circuit has stated that, to support combining or modifying references, there must be particular evidence from the prior art as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed. *In re Kotzab*, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000).

The Official Action has combined Shie et al. and Yang et al. despite the clear teachings away in Shie et al. Contrary to the requirements for establishing a *prima facie* case of obviousness, the references have been combined despite the teaching away in the reference as to the desirability of the combination. Moreover, even if combined, the claim recitations simply would not be described or suggested. The combination of elements recited in Claims 1 and 15 are only taught by the present application. For at least these reasons, independent Claims 3 and 15 are unobvious over the cited references. Dependent Claims 4-7, 9-14 and 16-20 are patentable at least per the patentability of the independent claims from which they depend.

Many of the Dependent Claims Are Separately Patentable

Dependent Claims 4-7, 9-14 and 16-20 also stand rejected under 35 USC §103(a) as being unpatentable over Shie et al. in view of Yang et al. These claims are patentable at least per the patentability of the independent claims from which they depend. Moreover, many of these dependent claims are separately patentable.

For example, Claim 4 recites:

4. A mounting substrate according to Claim 3 wherein face is a first face and wherein the first and second spaced apart conductive traces extend from the cavity to the first face, around at least one side of the aluminum block and onto a second face of the aluminum block that is opposite the first face. (Emphasis added.)

In re: Gerald H. Negley et al.
Application Serial No.: 10/659,108
Filed: September 9, 2003
Page 6 of 7

At the bottom of Page 3, the Official Action contends that Shie et al. discloses that the first and second spaced apart conductive traces extend around at least one side of the aluminum block 10 in Figures 1 and 2. However, in Figures 1 and 2, the conductive traces 14 do not appear to extend around the side 10 of the aluminum block. In fact, Figures 1 and 2 of Shie et al. clearly appear to illustrate absence of the conductive traces on the side of the aluminum block 10. Accordingly, Claim 4 is independently patentable.

Claim 5 also is independently patentable because Claim 5 recites:

5. A mounting substrate according to Claim 3 wherein the first and second spaced apart conductive traces on the conformal insulating coating in the cavity comprise reflective material.

Since neither of the references describe conductive traces on the conformal insulating coating in the cavity, none of these references describe the recitations of Claim 5 wherein the conductive traces comprise reflective material.

Claim 6 is patentable at least per the patentability of Claim 3 from which it depends. Applicants also wish to note that, to the extent the Official Action is relying on Yang et al. as teaching the through holes and conductive vias therein, this same structure could not describe or suggest the above-underlined recitations of independent Claims 3 and 15. This provides further confirmation of the patentability of the independent claims.

Claim 7 is also independently patentable because Claim 7 recites:

7. A mounting substrate according to Claim 6 wherein the first and second through holes extend from the cavity to the second face.

Neither of the references describe through holes that extend from the cavity to the second face.

Claim 17 is patentable for at least the same reasons that were described above in connection with Claim 5. This analysis will not be repeated for the sake of brevity.

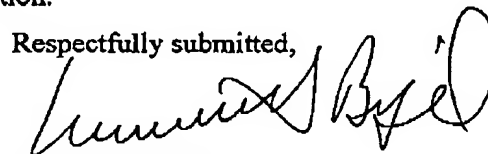
Claim 19 also is independently patentable for the same reasons that were described above in connection with Claim 7. This analysis will not be repeated for the sake of brevity.

In re: Gerald H. Negley et al.
Application Serial No.: 10/659,108
Filed: September 9, 2003
Page 7 of 7

Conclusion

Applicants again appreciate the continued thorough examination and the withdrawal of the earlier rejections. However, Applicants respectfully submit that the claimed invention has already been patentably distinguished over Shie et al. Moreover, the clear teachings of Shie et al. preclude the combination with Yang et al. Finally, even if the references were combined, notwithstanding the clear teachings away in the primary reference, the combination simply would not describe or suggest the claim recitations of the independent claims and many of the dependent claims. Accordingly, Applicants respectfully request withdrawal of the outstanding rejections and allowance of the present application.

Respectfully submitted,

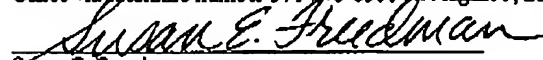


Mitchell S. Bigel
Registration No. 29,614
Attorney for Applicants

Customer Number 20792
Myers Bigel Sibley & Sajovec, P.A.
P.O. Box 37428
Raleigh, NC 27627
919-854-1400
919-854-1401 (Fax)

**CERTIFICATION OF FACSIMILE TRANSMISSION
UNDER 37 CFR § 1.8**

I hereby certify that this correspondence is being facsimile transmitted to the U.S. Patent and Trademark Office via facsimile number 571-273-8300 on August 9, 2005.



Susan E. Freedman
Date of Signature: August 9, 2005